



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,384	09/24/2004	Jeung-Eui Seo	01055-1000	2005

7590 12/09/2005

Dittavong & Carlson  
10507 Braddock Road  
Suite A  
Fairfax, VA 22032

EXAMINER

SANDERS, KRIELLION ANTIONETTE

ART UNIT	PAPER NUMBER
----------	--------------

1714

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,384	<b>Applicant(s)</b> SEO, JEUNG-EUI	
	<b>Examiner</b> Kriellion A. Sanders	<b>Art Unit</b> 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected as being unpatentable under 35 USC § 103(a) as being unpatentable over Andersen et al, US Patent No. 6168857 in view of Holy, US PG PUB 30030038857 and Stilbiger, US Patent No. 6284838.

Andersen et al discloses biodegradable starch-based compositions and methods for manufacturing sheets thereof wherein said sheets have a starch-bound matrix reinforced with fibers and which optionally include an inorganic mineral filler. Suitable mixtures for forming the sheets comprise water, unmodified and ungelatinized starch granules, an auxiliary water-dispersible organic polymer, fibers, and optionally an inorganic mineral filler. Starch is a natural *carbohydrate* chain comprising polymerized glucose molecules that are found in nature in the form of granules. The starch granules include two different types of glucose chains: unbranched, single-chained *amylose* and branched multi-chained amylo-pectin.

The Andersen et al invention provides for the use of starch in combination with an auxiliary

Art Unit: 1714

polymer for reducing adhesion. This combination of auxiliary polymer and starch binder provides the advantages of substantially reducing the cost of making the sheets, while preventing the starch from sticking to the rollers during the sheet forming process. Anderson et al also states that the inclusion of relatively large amounts of starch, results in sheets which are generally stronger, less brittle, and more *biodegradable* than sheets that include a high amount of auxiliary polymer binders.

Patentee indicates that in order for the composition mixture to have adequate workability, water must generally be included in quantities sufficient to wet each of the inorganic aggregate particles, fibers, or other solid particles, to solvate or at least disperse the auxiliary polymer, and to at least partially fill the interstices or voids between the particles. However, in some cases, such as where a dispersant or a *lubricant* is added, adequate workability can be maintained while using less water initially.

The auxiliary polymers useful in the invention, have varying levels of water solubility, dispersability, viscosity and yield stress. For example, patentee states that a 2% solution of Tyloseg FL 15002 (a methylhydroxyethylcellulose) at 20.degree. C has a viscosity of about 15000 cps, while a similar solution of Tyloseg 4000 has a viscosity of about 4000 cps. The former polymer greatly increases the yield stress and plastic-like properties of the mixture, while the latter acts more as a *lubricant* or plasticizer.

Suitable water-dispersible synthetic organic polymers useful for the invention include, polyvinylalcohol and polyacrylic acids.

Suitable plasticizers for use in the patented invention include polyethylene glycol (polypropylene glycol, glycerin, polyglycerine, sorbitol, mannitol, erythritol and xylitol. Such

materials can be used to cause the formed sheets to behave in a thermoplastic manner once a sufficient amount of water has been removed by evaporation. While residual water can assist in causing the formed sheets to behave in a thermoplastic manner, the plasticizers may yield thermoplastic sheets even in the absence of water. Virtually any polyhydric alcohol can be used as a plasticizer within the scope of the patented invention.

The moldable mixture is blended and transported to an extruder and a series of rollers. The moldable mixture is formed into a sheet by extruding the material through an appropriate extruder die and then passing the extruded material through at least one pair of reduction or forming rollers. Cutting the sheet to a predetermined size is an obvious variation to the art-skilled.

Calcium carbonate is also used in the Andersen et al compositions. See the working examples.

The binding matrix including starch is present in a concentration in a range of 15% to about 75% by weight of total solids in the sheet. The auxiliary water-dispersible organic polymer is present in a concentration in the range of from 1% to about 10% by weight of total solids in the sheet. The inorganic mineral filler is included in a range from 0% to about 90% by weight of total solids in the sheet. The inorganic mineral filler has a concentration in a range from about 10% to about 80% by weight of total solids in the sheet.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to elect the most advantageous weight percentages of components from those disclosed within the Andersen et al invention to achieve the greatest results of biodegradability and

Art Unit: 1714

strength. Since the starch component of Andersen et al is essentially the same as applicant's, with the it is thought that the water content of the starch components is also the same.

Holy teaches metal stearates to be suitable lubricants for biodegradable thermoplastic compositions which may additionally include polyvinyl alcohol, amylose or amylopectin. See paragraphs 0034 through 0088.

Likewise, Stilbiger also teaches metal stearates to be suitable lubricants, particularly when used in an amount of 0.5 to 5.0% by weight of the composition. See col. 6, lines 49-52.

### ***Response to Arguments***

1. Applicant's arguments filed 9/29/05 have been fully considered but they are not persuasive. Applicant argues that the invention of Anderson does not suggest the present invention because it lacks certain components of the present invention. Applicant indicates that, specifically, Anderson fails to include a metal soap. Applicant contends that the calcium carbonate used by patentee is not a metal soap because metal soaps are metal salts of long chain fatty acids, such as caproic, stearic and oleic acids.
2. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the metal soaps of applicant's invention are formed from long chain fatty acids) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). None the less the secondary references to Holy or Stilbiger now support the addition of metal salts even from long chain fatty acids in biodegradable starch/thermoplastic compositions. The references teach that metal salts are well known as a

Art Unit: 1714

lubricant for degradable polymeric compositions that contain amylase and amylopectin. Since a component may not be separated from its functionality, it is clear that the metal soaps must also function as a stabilizer if this characteristic is inherent to the soaps. Applicant fails to indicate what type of stability is being achieved from these soaps in the present invention. So, if stabilizing functions are an inherent property of metal soaps, said stabilizing functions would inherently be achieved if the metal soaps were employed in the Anderson et al compositions in the suggested capacity of lubricant.

3. Since Anderson et al indicates that lubricants may be used in the patented compositions, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to employ the metal soap lubricants taught by either of Holy or Stilbiger as the specific lubricant's of Anderson et al, with the expectation of achieving appreciable results.

Anderson has indicated the economic advantage of the patented compositions. Therefore this is not an unexpected feature for applicant's invention as claimed.

Prior art cited on form 892 and not relied upon herein provides technological background information. The references teach that the use of metal salts in biodegradable compositions is well known for two purposes, first because they function as a lubricant and secondly, because they function as a pro-oxidant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 6:30-7:00.

Art Unit: 1714

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kriellion A. Sanders  
Primary Examiner  
Art Unit 1714

ks